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10/761,772	01/20/2004	Alan Kenneth McCall	1981/689	3683

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EXAMINER	
PHAM, LAM P	
ART UNIT	**PAPER NUMBER**
2612	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	04/05/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No.	Applicant(s)	
	10/761,772	MCCALL ET AL.	
	Examiner	Art Unit	
	Lam P. Pham	2612	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *03 January 2007*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-26* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-10 and 18-26* is/are rejected.

7)☒ Claim(s) *11-17* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 1, 18, 24-26 are rejected under 35 U.S.C. 102(e) as being anticipated by **Pierbon** (US 2006/0044125).

Re claim 1, Pierbon discloses a tire monitor configured for mounting to a vehicle, the tire monitor comprising:

a tire condition sensor (pressure) to produce a tire condition signal ;

a controller (IC on board) coupled to the tire condition sensor to control the operation of the tire monitor;

a radio circuit coupled to the controller to transmit radio signals based at least in part on the tire condition signal; and

a shock sensor (8) coupled to the controller to produce an analog motion signal indicating motion of the tire monitor as seen in Figures 1-2; [0014] to [0035].

Re claim 18, Pierbon discloses a tire monitor operable in a remote tire monitoring system and mountable on a wheel of a vehicle including the system, the tire monitor comprising:

a pressure sensor;

a radio circuit for sending information;

at least one shock/motion detector (8) for providing an analog motion signal indicating motion of the wheel; and

a control circuit (IC on board) coupled with the pressure sensor, the radio circuit and the at least one shock/motion detector as seen in Figures 1-2; [0014] to [0035].

Re claim 24, Pierbon discloses a tire monitor method for use in a tire monitor including a control circuit (IC board) and a plurality of motion sensors (8), the method comprising:

(a) detecting an output signal of a first motion sensor (first shock sensor 8);

(b) based on the first motion sensor output signal, making a motion conclusion (D1 direction) about motion of the tire monitor;

(c) detecting an output signal of a second motion sensor (second shock sensor 8);

(d) based on the second motion sensor output signal, making a motion conclusion (D2 direction) about motion of the tire monitor;

(e) repeating (a) through (d) until motion of the tire monitor (follow arrow 6) is detected based on one of the first motion sensor output signal and the second motion output signal as seen in figures 1-2; [0026] to [0035].

Re claim 25, Pierbon discloses detecting the output signal comprises detecting the output signal of a shock sensor as seen in [0029].

Re claim 26, Pierbon discloses the method further comprises continuing to detect the first and second motion sensor output signals after motion of the tire monitor is detected as long as the vehicle is moving at speed 40 km/h or above as seen in [[0032].

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 1-2, 4-6, 18-19, 21-23 rejected under 35 U.S.C. 103(a) as being unpatentable over **DeZorzi** (US 6232875) in view of **Pierbon** (US 2006/0044125).

Regards claim 1, DeZorzi discloses a tire monitor (14, 16, 18) configured for mounting to a vehicle, the tire monitor comprising:

a tire condition sensor to produce a tire condition signal (78, 84);

a controller (38, 72) coupled to the tire condition sensor to control the operation of the tire monitor;

a radio circuit (44) coupled to the controller to transmit radio signals based at least in part on the tire condition signal; and

a motion detector (32) coupled to the controller to produce a motion signal (logic High or Low) indicating motion of the tire monitor as seen in Figures 1-2; col. 3, lines 11-67; col. 4, lines 1-67; col. 5, lines 1-25.DeZorzi discloses the motion detector is in form of a normally open centrifugal switch (as example) that closes upon the associated

vehicle tire rotating at a predetermined speed and fails to disclose the motion detector is a shock sensor producing an analog motion signal.

Pierbon in same field of endeavor teach of using a detection device (4) comprising two shock sensors (8) for detecting motion of a tire monitor and outputting analog motion signal indicating motion of the tire monitor for use in determining a position of a wheel associated with tire monitor as seen in Figures 1-2; [0014] to [0035].

In view of Pierbon teaching of shock sensors for producing analog motion signal, it would have been obvious to one of ordinary skilled in the art to alternatively provide a shock sensor in the device of DeZorzi for producing a motion signal indicating the motion of the tire monitor containing the sensor.

Regards claim 2, DeZorzi would disclose the controller comprises a shock sensor interface (not shown) configured to detect and receive the motion signal produced by the motion detector via input line (74) when the shock sensor is incorporated into the device in place of the motion sensor (32) as seen in Figure 2; col. 4, lines 61-67; col. 5, lines 1-24.

Regards claim 4, DeZorzi fails to disclose comprising an analog to digital converter coupled with the shock sensor to convert the motion signal to motion data for interpretation by controller as an indication that the vehicle is stationary or in motion since the motion detector outputs a digital output (logic High or Low).

Rosenberger in same field of endeavor teaches of using an A/D converter (6) coupled to the motion sensor for converting the analog motion signal to motion data for interpretation by the controller (processor 7) as an indication that the vehicle unit/vehicle

is in motion or stationary as seen in Figure 2; col. 3, line 17-30. Thus, it would have been obvious to one of ordinary skilled in the art to utilize an Analog to Digital converter as taught by Rosenberger for converting motion signals to digital data for interpretation by controller.

Regards claim 5, DeZorzi fails to disclose expressly a comparator coupled with the shock sensor to produce an indication that the vehicle is stationary or in motion based on the comparison of the motion signal and a predetermined threshold.

Rosenberger teaches of using a motion sensor for generating an analog motion signal, digitized into digital data and inputting into the processor (7) for determining motion of the wheel caused by rotation versus no motion as seen in Figure 2; col. 3, lines 17-30, it is inherently that the processor must have a comparing means for comparing the input motion signal to a predetermined threshold signal (voltage level) in order to distinguish motion of the wheel caused by rotation from stationary (no motion).

In view of Rosenberger teaching, it would have been obvious to one of ordinary skilled in the art to incorporate a comparator coupled with the shock/motion sensor for comparing motion signal against a predetermined threshold signal for producing an indication that the tire monitor/wheel/vehicle is stationary or in motion.

Regards claim 6, DeZorzi disclose the controller is configured to place the tire monitor in a low power sleep mode (pre-sleep mode) in response to interpretation by the controller of the motion data as an indication that the vehicle is stationary as seen in Figure 3; col. 7, lines 35-45 and col. 8, lines 8-27.

Regards claim 18, DeZorzi disclose a tire monitor operable in a remote tire monitoring system and mountable on a wheel of a vehicle including the system, the tire monitor comprising:

a pressure sensor (78);

a radio circuit (44);

at least one shock/motion detector (32) for providing a motion signal indicating motion of the wheel; and

a control circuit (72) coupled with the pressure sensor, the radio circuit and the at least one shock/motion detector as seen in Figures 1-2; col. 3, lines 11-67; col. 4, lines 1-67; col. 5, lines 1-25.DeZorzi discloses the motion detector is in form of a normally open centrifugal switch (as example) that closes upon the associated vehicle tire rotating at a predetermined speed and fails to disclose the motion detector is a shock sensor producing an analog motion signal.

Pierbon in same field of endeavor teach of using a detection device (4) comprising two shock sensors (8) for detecting motion of a tire monitor and outputting analog motion signal indicating motion of the tire monitor for use in determining a position of a wheel associated with tire monitor as seen in Figures 1-2; [0026] to [0035].

In view of Pierbon teaching of shock sensors for producing analog motion signal, it would have been obvious to one of ordinary skilled in the art to alternatively provide a shock sensor in the device of DeZorzi for producing a motion signal indicating the motion of the tire monitor containing the sensor.

Regards claim 19, DeZorzi discloses the control circuit comprises:

a microprocessor core (controller);

a pressure sensor interface (calibration 98, see Figure 2);

a motion sensor interface (not shown for receiving the motion signal, see claim 2 for explanation); and

an analog to digital converter (94) coupled between the pressure sensor interface and the shock sensor interface and the microprocessor core as seen in Figure 2; col. 4, lines 61-67 and col. 5, lines 1-67.

Regards claim 21, DeZorzi disclose the at least one motion sensor produces a substantially periodic signal in response to rotation of the wheel according to the predetermined speed, the control circuit being responsive to the substantially periodic signal to determine a motion state of the tire monitor; a logic High indicates the vehicle moving and a logic Low indicates the vehicle is not moving at all; as seen in col. 5, lines 1-18.

Regards claim 22, DeZorzi disclose the at least one motion sensor

produces a resonant signal (proportional to the tire rotation) corresponding to predetermined vehicle speed in response to motion of the at least one motion sensor, the control circuit being responsive to the resonant signal to determine a motion state of the tire monitor as seen in col. 5, lines 1-18.

Regards claim 23, DeZorzi fails to disclose the at least one motion sensor produces a wideband noise signal in response to motion of the at least one shock sensor, the control circuit being responsive to the wideband noise signal to determine a motion state of the tire monitor. However, DeZorzi disclose the motion detector output

the logic High/Low motion signals when the vehicle is running at certain speed. The motion signals are interpreted by the controller to indicate a motion state of the tire monitor as seen in col. 5, lines 1-18. One of ordinary skilled in the art would consider the motion signals being equivalent with the wideband noise for indicating motion state of tire.

5. Claims 3, 7 rejected under 35 U.S.C. 103(a) as being unpatentable over DeZorzi in view of Pierbon and **Hughes** et al. (US 5557268).

Regards claim 3, DeZorzi and Pierbon fail to disclose the shock/motion sensor interface includes at least one of an amplifier for amplifying the motion signal and a filter for filtering the motion signal.

It has been well known in the art of analog signal conditioning and processing to use an amplifier for amplifying an analog signal, a filter for filtering out noise from the signal and an ADC for converting the signal to digital data for storing and processing by a digital processor.

Hughes et al. in "Vehicle diagnostic system" teach of using signal condition electronics (2) and ADC (3) for amplifying and filtering signals from sensors and then converting conditioned signals to digital data for processing as seen in Figure 1c; col. 3, lines 50-65 of Hughes et al. Thus, it would have been obvious to one of ordinary skilled in the art to use conditioning electronics as taught by Hughes for receiving an analog motion signal for amplifying and filtering to obtain desired signals before converting conditioned signals to digital data for latter processing or analyzing.

Regards claim 7, DeZorzi, Pierbon and Hughes et al. combinedly disclose the controller comprises:

a shock sensor interface to receive the motion signal produced by the shock sensor and produce an amplified motion signal; see claim 2 for explanation.

an analog to digital converter coupled the shock sensor to convert the amplified motion signal to motion data; see claim 4 for explanation; and

a processor responsive to stored data and instructions to determine a motion condition of the vehicle based on the motion data as seen in Figure 1-2; col. 4, lines 61-67 and col. 5, lines 1-24.

6. Claims 8-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over **DeZorzi** in view of **Pierbon** and **McSweeney** (US 5631630).

Re claim 8, DeZorzi and Pierbon combinedly disclose a motion detection method in a tire monitor configured for mounting on a vehicle in a remote tire monitoring system including a receiver, the method comprising:

detecting an output signal of a shock sensor (8);

based on the output signal, making a current motion conclusion (tire is rotating, vehicle is moving);

transmitting data from the tire monitor for reception by the receiver as seen in claim 1 explanation.

However, both DeZorzi and Pierbon fail to disclose further:

testing a last saved motion conclusion; and

if the current motion conclusion matches the last saved motion conclusion, transmitting data to receiver.

McSweeney in the field of motion monitoring disclose a method of redundant monitoring using two motion detectors for detecting motion of human at a pool area to reduce false alarms when two detectors outputs are compared against each other and alarm is generated and transmitted as seen in Figure 1 col. 2, lines 53 to col. 3, lines 47.

In view of McSweeney teaching regarding a method of redundant monitoring, it would have been obvious to one of ordinary skilled in the art to further provide the step of comparing a last saved motion conclusion with the current motion conclusion to reduce false or error when the two conclusion are matched to indicate motion of the tire monitor and transmit data to a receiver for receiver.

Re claim 9, DeZorzi discloses in transmitting comprises transmitting only when supervisory timing of the tire monitor permits transmission as seen in col. 7, lines 14-34.

Re claim 10, DeZorzi and Pierbon and McSweeney disclose further comprising:

if the current motion conclusion and the last saved motion conclusion indicate motion of the tire monitor, testing a motion decisions counter; and if the motion decisions counter exceeds a threshold (zero), transmitting the data from the tire monitor as seen in claim 8 for explanation.

7. Claim 20 has been rejected under 35 U.S.C. 103(a) as being unpatentable over DeZorzi in view of Pierbon and **McClelland** et al. (US 6710708).

Regards claim 20, DeZorzi fails to disclose the monitor further comprising:

a transponder, the control circuit further comprising a transponder interface coupled to the microprocessor core.

McClelland et al. teach of a tire monitor (12) comprising a transponder and controller comprising a transponder interface coupled to the microprocessor core as seen in Figures 3 and 4; col. 3, lines 35-67 and col. 4, lines 1-67.

In view of McClelland teaching, it would have been obvious to one of ordinary skilled in the art to have a transponder coupled to the controller of the tire monitor for responding to an interrogation signal from a reader/writer device. band noise for indicating the motion state of the tire monitor.

Allowable Subject Matter

8. Claims 11-17 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Weinbrenner (US 6,466,887) discloses a wheel rotational sensor using dual accelerometers.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lam P. Pham whose telephone number is 571-272-2977. The examiner can normally be reached on 10AM-7PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Daniel J. Wu can be reached on 571-272-2964. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Lam P Pham
Examiner
Art Unit 2612

March 19, 2007.

BENJAMIN C. LEE
PRIMARY EXAMINER